

Appl. No. 10/631,384  
Amdt. dated 11/23/05  
Reply to Office action of August 25, 2005

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-14 remain in the application. Claims 1-9 are subject to examination and claims 10-14 have been withdrawn from examination. No claims have been amended, added or canceled herein.

In "Claim Rejections - 35 USC § 103", item 3 on pages 2-3 of the above-identified Office Action, claims 1-9 have been rejected as being obvious over U.S. Patent No. 6,483,860 to Ueki et al. (hereinafter Ueki) in view of U.S. Patent Application Publication No. US 2003/0152125 to Kinoshita under 35 U.S.C. § 103(a).

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and, therefore, the claims have not been amended to overcome the references.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful. Claim 1 calls for, *inter alia*, a surface emitting semiconductor laser chip, comprising:

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a semiconductor body having, at least partly, a crystal structure with principal crystal directions, a radiation exit face, and side faces laterally delimiting said semiconductor body, at least one of said side faces disposed obliquely with respect to the principal crystal directions and perpendicularly with respect to said radiation exit face.

Thus, according to the invention of the instant application as recited in claim 1, at least one of the side faces of the semiconductor body is disposed obliquely with respect to principal crystal directions of the semiconductor body and perpendicularly with respect to a radiation exit face of the semiconductor body. See the principal crystal directions 7, the exit face 4 and the side faces 5 of Fig. 1 of the instant application.

The Ueki reference discloses a surface emitting semiconductor laser with an oxidized post structure, including a substrate 10 on which a first reflecting mirror 12 is disposed. A cylindrical post part 24 has an active spacer region 14 disposed on the mirror 12 and a selective oxidation layer 16 on the spacer 14. A second reflecting mirror 18 is disposed on the layer 16. A contact layer 20 is disposed on the second reflecting mirror 18. As is stated by the Examiner at the bottom of page 2 of the Office action, Ueki does not have a side face disposed obliquely to the principal crystal directions.

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The Kinoshita reference discloses a surface emitting laser and semiconductor light emitting device including, in Fig. 2, a substrate 1 on which a cladding 2, an active layer 3, a cladding 4 and a waveguide layer 5 are disposed. Side surfaces 60" including the layer 3 are slanted in the same direction. Figs. 1A and 1B of Kinoshita illustrates a side surface S with the layer 3 being slanted relative to the cladding 2.

The Examiner has stated that it would be obvious for one of ordinary skill in the art to modify Ueki by incorporating the slanted side surfaces of Kinoshita therein, to reach the limitations of claim 1 of the instant application.

However, it must be noted that the side surfaces of Kinoshita are slanted to prevent the occurrence of oscillations of horizontal Fabry-Perot modes, as mentioned in paragraph 0013 of the reference. The semiconductor body in the region of the side surface is therefore in the shape of a truncated cone, having a truncated conical area with a side surface S as shown in Figs. 1A and 1B. The side surface S is a lateral area of the truncated cone, which is slanted all around and not perpendicular to the bottom and top (cover) surface of the truncated cone. This is contrary to the recitation in claim 1

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of the instant application calling for at least one side face perpendicular to the radiation exit face.

As acknowledged by the Examiner, Ueki does not have a side surface extending obliquely to the principal crystal directions, as recited in claim 1 of the instant application. According to the teachings of Kinoshita, a person of skill in the art would form the regions around the layer 14 below the mirror 18 in the laser chip according to Ueki with a shape corresponding to the truncated cone-shaped area described in Kinoshita in order to suppress the formation of Fabry-Perot modes. However, the side surface would then extend continuously obliquely relative to the radiation exit face, which clearly extends parallel to the top (cover) surface of the truncated cone and not, as claimed in the instant application, perpendicularly to the exit face. The subject matter of claim 1 is thus clearly not met by a combination of the teachings of the Ueki and Kinoshita references.

Furthermore, a person of skill in the art is provided no incentive by Kinoshita to deviate from the continuous oblique structure of the side surface, since such a deviation would cause the side surface to then extend perpendicularly which would promote the formation of Fabry-Perot modes, according to the teachings of Kinoshita. The formation of Fabry-Perot

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modes, however, is avoided according to Kinoshita so that Kinoshita teaches away from the invention claimed in the instant application, that is away from a side surface perpendicular to the radiation exit face as well as oblique to the principal crystal direction.

Therefore, a person of skill in the art has all in all no incentive to form a semiconductor laser chip, in which a side surface of the chip extends perpendicularly to the radiation exit face and obliquely to the principal crystal direction, as claimed in the instant application.

Clearly, the prior art does not show or suggest a semiconductor body having a crystal structure with principal crystal directions, a radiation exit face, and side faces laterally delimiting the semiconductor body, at least one of the side faces disposed obliquely with respect to the principal crystal directions and perpendicularly with respect to the radiation exit face, as recited in claim 1 of the instant application.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art. The

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dependent claims are believed to be patentable as well because they all are ultimately dependent on claim 1.

Rejoinder of method claims 10-14 having the features of product claim 1 has been requested and is required upon allowance of product claim 1, according to MPEP 821.04. It is noted that the side surface of the chip extending perpendicularly to the radiation exit face and obliquely to the principal crystal directions, is also recited in method claim 10 of the instant application.

In view of the foregoing, reconsideration and allowance of claims 1-14 are solicited.

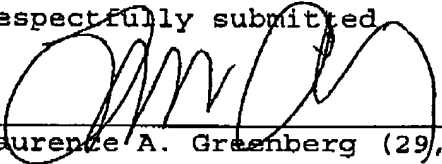
In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone from the Examiner call so that, if possible, patentable language can be worked out.

If an extension of time is required, petition for extension is herewith made. Any extension fee associated therewith should be charged to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

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Please charge any other fees that might be due with respect to  
Sections 1.16 and 1.17 to the Deposit Account of Lerner and  
Greenberg, P.A. No. 12-1099 as well.

Respectfully submitted

  
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Laurence A. Greenberg (29,308)

LAG/bb

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Lerner and Greenberg, P.A.  
P.O. Box 2480  
Hollywood, Florida 33022-2480  
Tel.: (954) 925-1100  
Fax: (954) 925-1101